AUSTRALIAN ACANTHOCEPHALA

No. 3

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[Presented 8 October 1942]

The present paper deals with species of *Corynosoma* obtained from bird and mammalian hosts from South Australian waters. Types of the new species, as well as representatives of the others referred to in this report, have been deposited in the South Australian Museum. We desire to acknowledge our indebtedness to the Director of the latter institution for material from *Delphinus delphis;* and also to the Commonwealth Research Grant to the University of Adelaide for financial assistance.

Phalacrocorax varius Gmelin—*Corynosoma clavatum* Goss.
Delphinus delphis Linn.—*Corynosoma cetaceum* n. sp.
Tursiops truncatus Montague—*Corynosoma cetaceum* n. sp.
Neophoca cinerea (Péron), syn. *Arctocephalus forsteri* of Johnston 1937—*Corynosoma australe* Johnston.
Gypsophoca dorifera (Wood Jones)—*Corynosoma clavatum* Goss.

Corynosoma cetaceum n. sp.

(Fig. 1-10, 13)

The material examined came from two collections from dolphins—*Delphinus delphis* (type host) from St. Vincent Gulf, and *Tursiops truncatus* from Port Lincoln. The parasites from the former host were rather larger and much more numerous than those from the latter but the arrangement of the body spines and proboscis hooks was similar, as also was the general anatomy. The copulatory bursa was fully everted in most of the males from *Delphinus.*

The length ranged from 3 to 7 mm. in males (exclusive of the bursa), and 1·7 to 3 mm. in females, the greater number of specimens approaching the upper limit of the range in both sexes. The comparative shortness and stoutness of the female allowed ready differentiation of the sexes. The anterior disc-like region varied from 1·3 to 1·7 mm. in diameter in males, and from 1·3 to 2 mm. in females, and is covered with conspicuous spines, ·05 mm. long, surrounded by very obvious protuberances of the cuticle. Similar spines extend towards the posterior end of the body in both sexes, but they do not surround the genital aperture.

The proboscis and its hook arrangement closely resemble those of *C. antarcticum,* except that the former tapers evenly from the base to its tip (fig. 1, 3). In a typical specimen the organ measures ·97 mm. long, ·33 mm. wide at the base, and ·17 mm. at the tip. There is a short neck, ·2 mm. in length, ·45 mm. in width, and devoid of spines. The portion of the body immediately following the neck sometimes projects from the disc as a cone, which like the disc, bears spines. The proboscis hooks are arranged in 18 longitudinal rows of 14-16 hooks, whose form in profile is shown in fig. 3.

The proboscis sheath is double-walled and measures 1·3 by ·3 mm., the ganglion lying at about its midlength. The body cavity, particularly in the disc is, as usual in the genus, crossed by very numerous strands of muscle within which the small irregular leaf-life lemnisci are enclosed. The lacunae of the body wall are very inconspicuous, and longitudinal vessels are hardly to be distinguished from the general network.

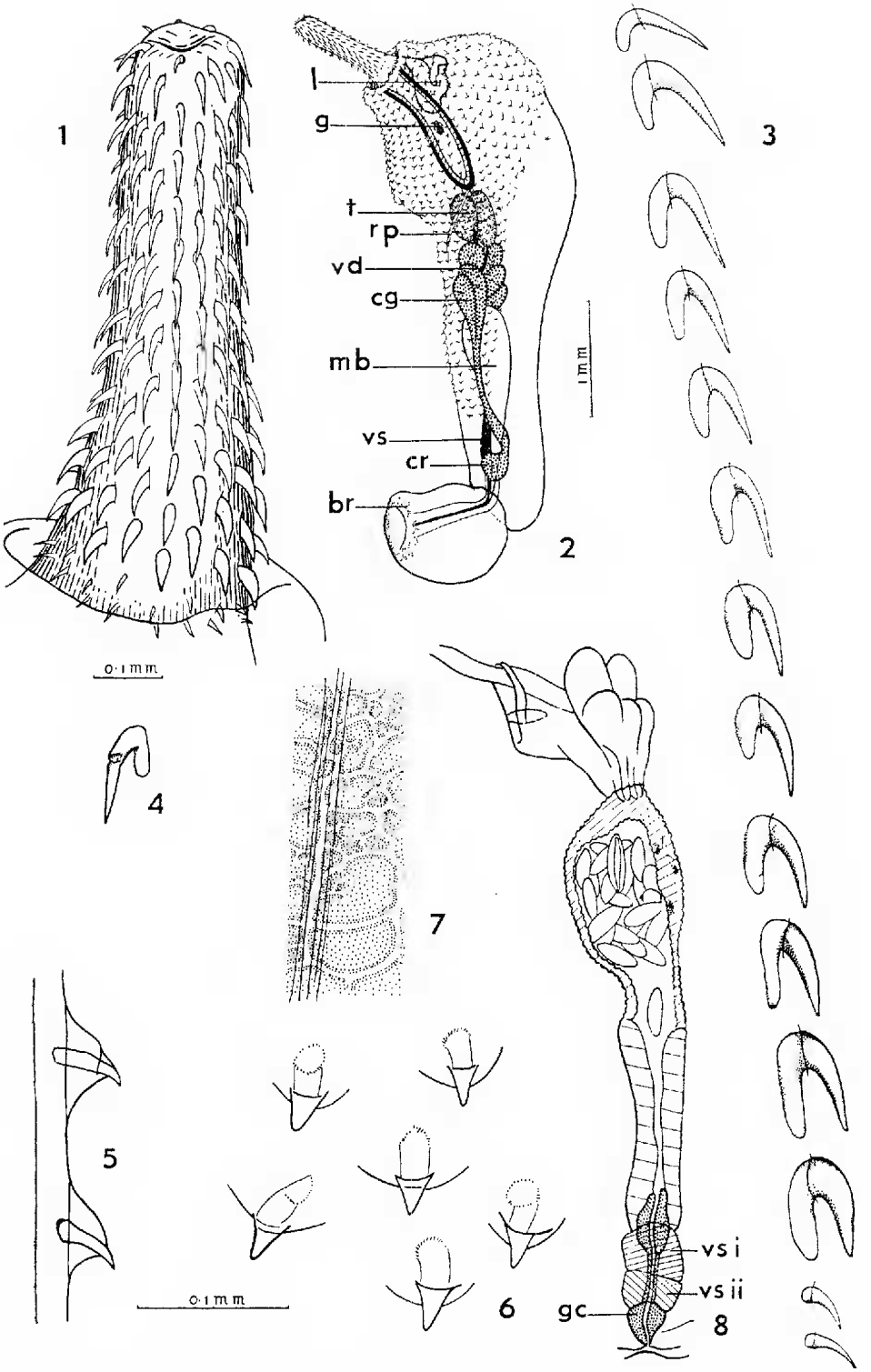

Fig. 1-8, *Corynosoma cetaceum:* 1, proboscis; 2, male; 3, proboscis hooks in profile; 4, malformed hook often seen in any position along the rows; 5-6, body spines; 7, lacunar system; 8, female system. Fig. 3-6 are drawn to the same magnification.

ab, auricle of bursa; b, bursa; br, bursal ray; cg, cement gland; cr, cement reservoir; g, ganglion; gc, gland cell; gl, genital ligament; l, lemniscus; mb, markbeutel; r, retinaculum; rp, retractor of proboscis; t, testis; vd, vas deferens; vs, vesicula seminalis; vs 1, vs 2, vaginal sphincters.

Male—The testes lie side by side, almost at the same level, just behind the proboscis sheath. The vasa deferentia unite at about the anterior end of the "markbeutel," the common duct being swollen at its base to form a thin-walled vesicula seminalis. The ducts of the six compact cement glands unite, three on each side, to form lateral ducts which are swollen at their bases and join to form the U-shaped cement reservoir. The everted bursa is particularly large and robust, approximately 1 mm. in length and in breadth, with eighteen sensory rays. The posterior fifth of the body is completely devoid of spines.

Female—The uterus proper is about 1 mm. long and ·25 mm. in maximum width. The uterine bell is borne at an angle to it and is ·5 mm. long, with very marked projections bearing the lateral apertures. The anterior half of the uterus is thin-walled and swollen, and is succeeded by a narrower muscular portion. Both vaginal sphincters are well developed. The eggs are thick-shelled, with obvious polar prolongations of the inner shell. Those within the swollen portion of the uterus appeared to be all about the same size, ·13 by ·045 mm. The ventral body spines reach the level of, but do not actually surround, the genital aperture.

The generic concept of *Corynosoma* Lühe 1904 has been so modified that Van Cleave (1936) has stated that "spines around the genital orifice, at least in the males, is the only single criterion available for recognising the genus." Nevertheless, the species here described combines so many of the features of the original concept that the lack of spines around the sex aperture cannot exclude it from *Corynosoma*. It would seem that the peculiar expanded and flattened form of the lemnisci may assume importance as a diagnostic feature. The strong musculature of the disc obscures their form in whole mounts, and they can be seen clearly often only on dissection; consequently, the term band-like which is sometimes applied to them is probably a misinterpretation, based on a side view.

The species differs from the closely allied *C. antarcticum* from Antarctic seals in several respects. The body spines of the latter, as seen in specimens available for comparison, are much less conspicuous, and though of approximately similar size, are more deeply embedded in the subcuticula and extend in both sexes to surround the genital aperture. There are also differences in the detailed anatomy and proportions of both male and female organs. The presence of eighteen longitudinal rows of proboscis hooks occurs commonly in the genus. The forms of the proboscis and the arrangement of its hooks resemble those of both *C. antarcticum* and *C. australe*, but the latter is a much smaller parasite. The posterior ends of males of the three species are illustrated in fig. 11-13 for comparison. The arrangement of the spines surrounding the genital opening is quite distinctive.

Corynosoma sp. has been recorded from *Delphinus longirostris* from Japanese waters by Yamaguti (1935), but the size and proportions are different from those of *C. cetaceum*, being 14 mm. in length and 1 mm. in width of the disc in the former, as against 3 mm. by 2 mm. in the Australian species. The material described from *Delphinus delphis* is that recorded by us as *Corynosoma* sp. (Johnston and Deland, 1929).

Corynosoma clavatum Goss

(Fig. 14-19)

The species was described by Miss Goss (1940) from material collected from three species of cormorants from Western Australia. We have a single male specimen from *Phalacrocorax varius* from Port Gawler. It is not in a very satisfactory condition for comparison, but the host relationship, size, and form of the proboscis and its hooks have led us to identify it as *C. clavatum*.

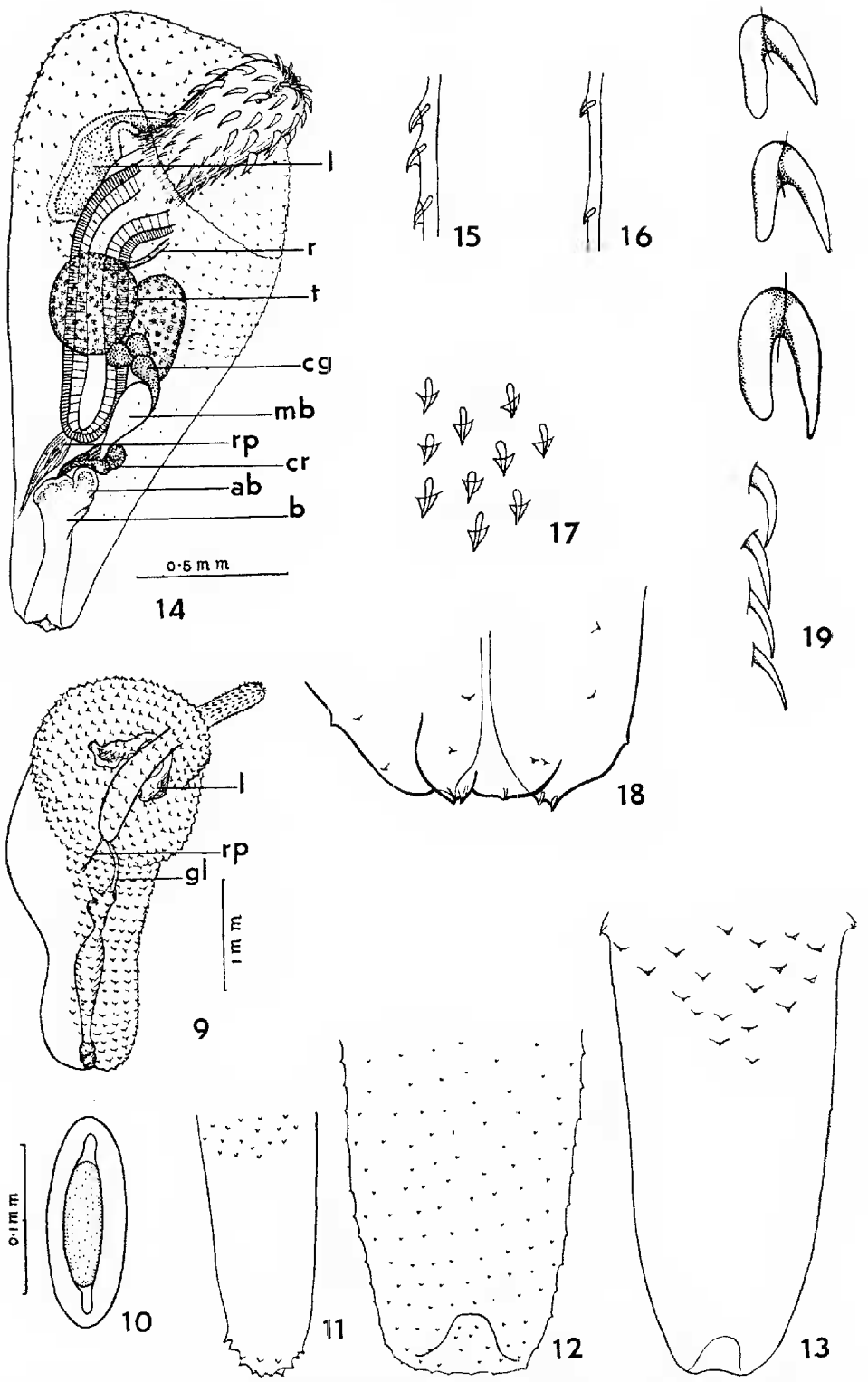

Fig. 9, 10, 13, *Corynosoma cetaceum:* 9, female; 10, egg; 13, posterior end of male. Fig. 11, *C. australe,* posterior end of male. Fig. 12, *C. antarcticum,* from Weddell seal. Fig. 14-19, *C. clavatum,* from seal: 14, male; 15, spines from disc; 16, ventral body spines; 17, disc spines; 18, posterior end of male; 19, hooks in profile. Fig. 10, 15-19 are drawn to the same magnification. Lettering as in preceding figures.

Three males, regarded as belonging to the same species, were collected from a seal, *Gypsophoca dorifera,* which had been captured off Yorke Peninsula and had died after having been some time in captivity. The only important respect in which the specimens differ from the account given by Miss Goss, is in the presence of distinct spines about the genital aperture. The sizes of the various organs, except the cement glands, are comparable. The small size of the cement glands in our material may indicate immaturity. Miss Goss referred to the parasite (1940, 1) as *Polymorphus clavatus,* as well as *C. clavatum.* Figures showing the distribution of the body spines, as well as certain anatomical features, exhibited by material from the seal, are now given, and in addition, details of the hooks and spines (fig. 14-19), since these are not shown in the original account. *C. phalacrocoracis* Yamaguti (1939, 337) from *Phalacrocorax pelagicus* from Japan is a very much larger form.

Corynosoma australe Johnston

(Fig. 11)

This species was described from the South Australian hair seal which was incorrectly identified as *Arctocephalus forsteri.* The latter name is now restricted to a species occurring in New Zealand, our local seal being known as *Neophoca cinerea,* under which name the parasite should be listed. Re-examination of the material from Pearson Island has revealed some errors in the original account. The scale beside fig. 8 is marked to indicate 2 mm., but should be 1 mm., the testes are recorded as ·04 mm. instead of 0·4 mm., and the lemnisci have been ascertained, on dissection, to possess the irregular leaf-like form common in the genus.

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